

research has demonstrated the presence of scandium in comparative abundance in the sun and some of the brighter stars. To enable its spectrum lines to be identified with certainty, especially in some of the fainter celestial bodies, a thorough examination of its spectrum has been undertaken.—*Messrs. Johnson, Matthey and Co., Ltd.*: (1) Apparatus in transparent fused silica; (2) various vessels of pure iridium.

Miss Amy Barrington and Prof. Karl Pearson, F.R.S.: Specimens of the hair of chestnut horses. Samples of hair from the ribs, mane, and tail of chestnut horses to show:—(1) the wide range of chestnut coats; (2) that "chestnut" is not a simple unit character; and (3) that the mane and tail of chestnuts can be sensibly black.—*Marine Biological Association of the United Kingdom*: (1) Living representatives of the Plymouth marine fauna; (2) photographs illustrating methods of dredging and trawling (North Sea investigations).—*The Grouse Disease Commissioners*: Specimens illustrating certain aspects of the work of the Grouse Disease Committee, 1905-8. A committee of inquiry into the causes of disease in the red grouse (*Lagopus scoticus*) was constituted in 1904 at the suggestion and under the chairmanship of Lord Lovat; the work and results, of which the exhibit represented a part, will be published by the Zoological Society of London.—*Mr. C. Gordon Hewitt*: The large larch saw-fly (*Nematus erichsonii*, Hartig). The larch saw-fly has increased during the last few years to so great an extent in many of the large larch plantations in Cumberland as to become a serious pest. Many hundreds of acres of larches were completely defoliated in 1907. Except in the young plantations, it will be necessary to rely on natural means of control, of which birds and voles are at present the most important.—*Mr. F. Enock*: Living specimens of Mymaridæ-ovivorous parasites (new to Great Britain).

Prof. R. T. Hewlett and Mr. J. E. Barnard: A method of disintegrating bacterial and other cells. The machine consists of a phosphor-bronze vessel, revolving at a high speed, containing hardened steel balls, which are kept in position at the periphery of the vessel by a central steel cone. By retarding the revolution of the central cone, a drag is put on the balls, so that a grinding action takes place between them and the internal surface of the vessel. Rise of temperature is prevented by the use of liquid carbonic acid or other means.—*Dr. Ernest F. Bashford, for the Executive Committee, Imperial Cancer Research Fund*: Cancer as a manifestation of cell-life throughout the vertebrates, and the biological properties of cells which have become cancerous.—*Prof. W. B. Bottomley*: Bacterial treatment of non-leguminous plants. (1) Specimens showing effect of nitrogen-fixing organisms upon growth of oats, barley, turnips, radishes, tomatoes, &c.; (2) cultures and microscopical preparations of nitrogen-fixing bacteria (*Pseudomonas radicola*, *Azotobacter beyerinckii*, &c.).

Prof. J. Milne, F.R.S.: Seismograms recorded by a Milne seismograph in the Isle of Wight. (1) These seismograms illustrate the difference in character of records obtained from the same instrument. The Mexican earthquake of March 26, 1908, was obtained on *quickly* running paper. The earthquakes of August 9, 1901, were obtained on *slowly* moving paper. In the former halation effects do not eclipse the first preliminary tremors, and an open diagram is obtained. (2) The three earthquakes which occurred on August 9, 1901, indicate the value of seismograms in correcting cablegrams. The interval of time between the preliminary tremors and the maximum motion shows that the origins of the first and third disturbances were 6000 miles distant, while the second was nearly 7000 miles distant. The first and last came from Japan, while the second came from the East Indies. In American and European newspapers it seems to have been universally stated that the origins were in Alaska.—*Dr. C. W. Andrews, F.R.S.*: Restored model of the skull and mandible of *Prozeuglodon atrox*. *Prozeuglodon atrox* is a primitive whale (Zeuglodont), and is one of the forms which unite the true Zeuglodonts with the early land-carnivores known as Creodonts.—*Mr. J. Y. Buchanan, F.R.S.*: Features of land-ice illustrated by photographs and stereoscopic slides in the taxiphote. These slides, taken last winter in the grotto of the Morteratsch glacier, illustrate the internal structure of the ice in winter.—*Mr. A. Hutchinson*: Pro-

tractors for constructing stereographic and gnomonic projections of the sphere. The protractors exhibited are intended for the use of students of crystallography, and are designed to facilitate the construction of great and small circles in the stereographic projection.

Mr. Henry Balfour: Stone implements of very early date from the Zambezi River and some of its tributaries. A large proportion of the implements of chalcedony, quartzite, &c., are of forms exactly similar to types characteristic of the river-drift period of western Europe and Great Britain. These were found associated with, and evidently forming part of, ancient terrace gravels deposited as drifts by the Zambezi at a remote period. Several implements were found by excavation in undisturbed gravel deposits at depths varying from 6 inches to 2 feet.—*Prof. W. M. Flinders Petrie, F.R.S.*: Drawings of ancient zodiacs.—*Prof. W. Gowland, F.R.S.*: Megalithic monuments in Japan (see NATURE, February 14, 1907, vol. lxxv., p. 382).—*Mr. Francis Fox*: The saving of Winchester Cathedral and other ancient buildings. (1) Specimens of the beechwood logs on which the cathedral stands; (2) block of the peat found beneath the walls, in some cases 8 feet in thickness; (3) sample of the gravel bed down to which the underpinning is carried by a diver; (4) old box-wood rule found during the operations.—*Mr. J. Gray*: An instrument for measuring the colour of the hair, eyes, and skin (NATURE, February 27, vol. lxxvii., p. 406).

Prof. Silvanus P. Thompson, F.R.S.: Drawings of early compass cards and windroses. The compass card was developed from windroses drawn on the Portulani, or sailing charts, at the points of intersection of the loxodromic lines. The drawings shown were from old Portulani or other early works dating from 1375 to 1584.—*Messrs. T. and R. Annan and Sons*: Photographs of Lord Kelvin.—*Mr. J. Stewart, Largs*: Photographs of Lord Kelvin, and relating to him.

Prof. A. H. Church, F.R.S.: Documents and specimens of historical interest referring to the Royal Society, including an unpublished letter of Captain James Cook, F.R.S., the circumnavigator, dated Rio de Janeiro, September 30, 1768, and seventeen portrait medals, struck at the Paris mint, of foreigners who were members of the Royal Society.

Messrs. B. J. Hall and Co., Ltd.: Ordoverax copying process. This process is one for rapidly and accurately producing facsimile copies of line drawings and tracings on any materials. The original is first copied on ferro-prussiate paper; the copy is placed before development, face downwards, on a plate of ordoverax composition previously prepared. The portions of the ferro-prussiate paper not affected by light act upon the ordoverax composition, causing it to take up printers' ink from a roller, whereas the parts of the plate not so acted upon do not take up any ink.—*Mr. Donald Cameron-Swan*: A new method of reproducing pencil and other drawings. This method (which is being employed for the Memoirs of the National Antarctic Expedition) differs from most photo-mechanical processes of reproduction in that the drawings are reproduced in exact facsimile, without any background of tone where none exists in the originals.

NOTES.

THE British associates and correspondants of the Institute of France will attend at St. James's Palace on Wednesday next, May 27, at 11 a.m., to present an address to the President of the French Republic on the occasion of his visit to this country.

THE Royal Society of London invites applications for two Mackinnon research studentships, each of the annual value of 150*l*. These studentships, which are restricted to British subjects, are offered for the purpose of researches in physical and biological sciences, one being awarded for research in the group of the physical sciences, including astronomy, chemistry, geology, mineralogy, and physics, the other for research in the group of the biological sciences, including anatomy, botany, palæontology, path-

ology, physiology, and zoology. Applications must be sent in to the Royal Society not later than June 10 on forms which can be obtained from the assistant secretary of the Royal Society, Burlington House, W.

ON July 1 the president and council of the Linnean Society will entertain the Darwin-Wallace medallists and foreign guests to dinner at Prince's Restaurant.

PROF. OTTO BÜTSCHLI, of Heidelberg, and Prof. A. G. Nathorst, of the Naturhistoriska Riksmuseum, Stockholm, have been elected foreign members of the Linnean Society.

THE annual visitation of the Royal Observatory, Greenwich, by the Board of Visitors will be held on Wednesday, June 3. The observatory will be open for inspection by guests at 3 p.m.

THIS year's meeting of the French Association for the Advancement of Science will be held at the beginning of August at Clermont-Ferrand. Sir William Ramsay, K.C.B., F.R.S., has accepted an invitation to lecture during the meeting on his researches. Full particulars of the proceedings at Clermont-Ferrand can be obtained from the offices of the French Association, 28 rue Serpente, Paris.

ON Tuesday next, May 26, Prof. W. Stirling will begin a course of two lectures at the Royal Institution on "Animal Heat and Allied Phenomena." The Friday evening discourse on May 29 will be delivered by Sir Ralph Payne-Gallwey on "Ancient and Mediaeval Projectile Weapons other than Firearms," and on June 5 by Sir James Dewar on "The Nadir of Temperature and Allied Phenomena."

THE first International Congress of the Cold Storage Industries is to be held in Paris, at the Grand-Palais, at the end of September next. One of the sections, of which M. d'Arsonval is the president, will concern itself with questions relating to low temperatures and their general effects. We understand that Sir James Dewar, Sir William Ramsay, and MM. Van der Waals, Kamerlingh Onnes, Linde, Georges Claude, and Jean Becquerel will be among the contributors to this section.

THE Berlin correspondent of the *Times* states that a scientific expedition to the South Seas left Hamburg on May 16 on board the steamship *Peiho*, a vessel of 900 tons, which has been specially chartered for the cruise from the Hamburg-American Line. The expedition has been organised by the trustees of the scientific foundations of the city of Hamburg, and its mission is to complete the exploration more particularly of the German islands in the South Seas and to collect materials for the study of the natives and natural resources of those regions. Dr. F. G. H. H. Fülleborn, assistant at the Hamburg Institute for Tropical Diseases, is in charge of the expedition, and he is accompanied by a competent staff of assistants.

THE Home Secretary has appointed a committee on the use of lead in the manufacture of earthenware and china. The committee includes, with others, Mr. E. F. G. Hatch (chairman), Mr. A. Vernon Harcourt, F.R.S., Dr. George Reid, Mr. William Burton, and Mr. Bernard Moore. The committee is to consider the dangers attendant on the use of lead in pottery, and to report how far these can be obviated or lessened by improved appliances and methods in lead processes, by the limitation of the use of lead, by the substitution of harmless lead compounds for raw lead, by the substitution of other materials for lead, and by other means. The danger or injury to health arising from dust

or other causes in the manufacture of pottery, and the special rules regulating the decoration of earthenware and china, are also to be considered.

A CORRESPONDENT writes:—"The Atlantic Ocean is in certain parts about four miles deep. Would a rock, if thrown into the ocean at its greatest depth, sink to the bottom?" The inquiry is a little indefinite, but Dr. C. Chree, F.R.S., has been good enough to send us a reply to it, in the course of which he points out that any solid of larger than microscopic dimensions will fall in a liquid with continuously increasing velocity so long as its density exceeds that of the liquid. Even at a depth of four miles the pressure of the water is only about four tons to the square inch, and such increase is quite insufficient to raise the density of water to that of ordinary rock. In the case of some exceptional form of rock, the density of which approaches closely to that of water when both are uncompressed, the result would depend on the relative compressibility of water and the material, combined with any slight effects due to change of temperature.

AT the instance of the late Secretary of State for the Colonies, and with the cooperation of the Government of the Sudan and the Royal Society, the Government has decided to establish in London a bureau for the collection and general distribution of information with regard to sleeping sickness. The Royal Society will find accommodation for the bureau at Burlington House, and one-fourth of the cost of upkeep will be borne by the Sudan Government. The bureau will be under the general control and direction of an honorary committee of management, appointed by and responsible to the Secretary of State for the Colonies. The committee will include the Right Hon. Sir J. West-Ridgeway, G.C.B. (chairman), Sir Patrick Manson, K.C.M.G., F.R.S., Sir Rubert Boyce, F.R.S., Dr. Rose Bradford, F.R.S., and Colonel D. Bruce, C.B., F.R.S. The main function of the bureau, which will be administered by a paid director, will be to collect from all sources information regarding sleeping sickness, to collate, condense, and, where necessary, translate this information, and to distribute it as widely and quickly as possible among those who are engaged in combating the disease. The publications of the bureau will be divided into two categories, viz. scientific publications intended for those who are engaged in research work or in carrying out medical administration in the infected districts, and publications of a less technical character for the use of Government officials, missionaries, and others, whose duties involve residence in those districts. One important piece of work will be the preparation of a map of the whole of tropical Africa, showing the distribution of the disease and of the different species of blood-sucking insects which are suspected of conveying it. The duties of the director of the bureau will for the present be undertaken by Dr. A. G. Bagshawe, of the Uganda Medical Staff, who has been seconded from the Protectorate service for the purpose.

A MEDUSA from Java, referable to the remarkable genus *Chiropsalmus*, previously known by one species from Brazil and Carolina and a second from the Rangoon coast, is described by Dr. R. Horst as new in Leyden Museum Notes (vol. xxix., No. 2) under the name of *Ch. buiten-dijki*. Unfortunately, the only known example of the Rangoon *Ch. quadrigatus* is in very bad condition, so that the distinctness of the Java form does not appear absolutely beyond doubt.

IN addition to a paper on fossil cetaceans by Mr. True, and one on the meteor-crater of Canyon Diablo by Mr. Merrill, which have been already mentioned in NATURE,

the fourth part of vol. iv. of the quarterly issue of Smithsonian Miscellaneous Collections contains an illustrated account, by Mr. R. Arnold, of the shells from the Tertiary oil-bearing strata of Santa Barbara, California,

STUDENTS of Coleoptera should be interested in a revision, by Mr. T. L. Casey, of the tenebrionid beetles of the subfamily Coniintinae, published in the Proceedings of the Washington Academy of Sciences (vol. x., pp. 51-166), where several new generic groups are suggested and named, and also in descriptions, by Mr. W. D. Price, of new weevil-like species of the group Anthonomini, forming No. 1604 of the Proceedings of the U.S. National Museum.

A LARGE portion of part iii. of vol. lxxxix. of the *Zeitschrift für wissenschaftliche Zoologie* is occupied by a contribution from Mr. Valentin Dogiel, of St. Petersburg University, entitled "Catenata, eine neue Mesozoen-gruppe." The new group is established for the parasites of the genus Haplozoon, one of which was discovered by the author (as narrated in the *Zoologischer Anzeiger* for 1906) in the intestine of the polychaete worm *Travisia forbesi*, and the other in that of *Clymene lumbricalis*, a second member of the same group. The paper is illustrated by three plates (one partly in colour) showing the structure and development of these remarkable organisms.

In the course of a paper on the nest of the ringed plover, published in the May number of *British Birds*, Mr. W. P. Pycraft argues that the commonly accepted theory as to the nesting of the earliest birds does not accord with the structure of Archaeopteryx. Such birds, according to this theory, are believed to have nested in holes in trees, where they laid white eggs. But, urges the author, such a habit would be unsuited to a bird with a long body tail, which, in his opinion, is more likely to have made its nest in some such site as the crown of a tree-fern or a cycad. Is, however, it may be asked, the tail of Archaeopteryx likely to have been much more in the way in a nesting-hole than are the tail-feathers of a hornbill?

Now that Lamarck has received the recognition due to a pioneer of the evolution-doctrine, it is interesting to learn of the existence in Harvard University of a holograph manuscript from his pen. This MS., as we gather from a notice contributed by Prof. Bashford Dean to the *American Naturalist* for March, was written some time previous to 1820, and forms a series of essays and drafts of later work, comprising about ninety folios, of which fifty have writing on both sides. It was presented to Harvard by Prof. A. Agassiz, who appears to have obtained it in Paris in 1906. Prof. Dean gives a summary of its chief contents, together with reproductions of pen-and-ink sketches of micro-organisms and of a holothurian by Lamarck himself.

THE urgency of legislation for the protection of whales and turtles forms the subject of a forcible article by Dr. G. R. Wieland in the May issue of the *Popular Science Monthly*. The destruction, and in some cases practical extermination, which have resulted from the pursuit of the more valuable species of whales are familiar to all, but it is less well known how serious is the diminution in the number of turtles—edible and otherwise. It is, urges the author in conclusion, "neither Utopian nor impractical to attempt and speedily carry out the measures required for the preservation, not only of land animals, but of all our great animals of the sea. The only element of doubt is whether the volume of sentiment can soon enough make itself felt—in short, whether the race has reached the required culture stage in time."

IN the *Philippine Journal of Science* (iii., No. 1), Mr. Y. K. Ohno gives formulæ which express the laws governing agglutination phenomena as regards bacteria and agglutinating sera. The union of agglutinin and agglutinable substance he regards as a chemical reaction, and not as an absorption phenomenon.

IN the Scientific Memoirs of the Government of India (No. 31), Capt. Patton, I.M.S., details further observations on the tropical disease, kala azar, and its parasite, the Leishman-Donovan body, which, he finds, undergoes a cycle of development in a bed-bug (*rotundatus*), by the bite of which the disease is presumably communicated.

OPINION has of late been divided as to whether spirochaetes belong to the bacteria or to the protozoa. In a paper on the *Spirochaeta pallida* of syphilis, Krzysztalowicz and Siedlecki definitely class these organisms as protozoa belonging to the Mastigophora, and propose to include them in a new family, the Spirilloflagellata (*Bull. Internat. de l'Acad. des Sciences de Cracovie*, No. 3, 1908).

TO meet the requirements of students and others with small incomes, Mr. C. Baker, of High Holborn, maintains a department for second-hand scientific instruments. The quarterly list recently issued contains as many as ten different sections. All kinds of microscopes and microscopic requisites, surveying and drawing instruments, also various pieces of optical and physical apparatus can be inspected and purchased under guarantee as to adjustment.

THE account of floral development and embryogeny in the wheat plant communicated by Mr. A. H. Dudley to the Liverpool Microscopical Society, and published in its thirty-ninth annual report, presents one or two special points of interest. The author obtains similar results to those recorded by Cannon for the megasporangium of *Avena* in so far that no parietal cell is cut off from the archesporium, and that numerous antipodal cells are produced in the embryo-sac; the limitation of the suspensor to the primary basal cell and the first divisions in the embryo appear to be similar.

TWO circulars referring to the International Botanical Congress that will be held in Brussels two years hence have been received. The first announces that, in place of the late Prof. Errera, Baron de Moreau, formerly Minister of Agriculture, has consented to become a president of the organising committee, sharing that position with Mr. Th. Durand, and that Dr. E. Wildeman will act as general secretary. The constitution of various local subcommittees is also indicated. The second circular gives the names of the two committees appointed for dealing with cryptogamic and palæobotanical nomenclature, and invites expressions of opinion with regard to rules additional to those formulated for phanerogamic plants and generic names that should be maintained in spite of priority rules.

AN editorial in the *Indian Forester* (March) referring to education and research in India cites the opinions expressed in *NATURE* of January 2 as to the wisdom of appointing professors and teachers who have shown their ability for prosecuting original research; in this connection, it is urged that the training of Indian foresters should be entrusted to men who have made a special study of forest problems in India. An instructive article on the private and communal forests in Japan is contributed by Sir Frederick Nicholson to contrast conditions with those found in the presidency of Madras. It is estimated that private forests cover 14 million acres, and the communal forests exceed 4 million acres, providing about an acre

and a half of woodland for every acre of arable land. Within recent years the necessity for re-planting has been recognised; *Cryptomeria japonica* and other conifers are generally selected, but camphor and chestnut trees are also largely planted; around the fields, mulberry, lacquer, and vegetable-wax trees are grown.

MR. C. F. STRAWSON has issued his ninth annual report on the destruction of charlock in corn crops during 1907 by spraying with a copper sulphate solution. Experiments extending over ten years have shown that young charlock can be destroyed in growing corn crops without injury to the latter by spraying with fifty gallons of 3 per cent. solution of copper sulphate (15 lb. to fifty gallons) per statute acre, and older charlock with a stronger solution. The corn crops are much improved, and give a better yield, where the charlock is destroyed, and young grass seeds and clover in the corn remain uninjured. The object of Mr. Strawson's annual reports is chiefly to induce those who cultivate charlock-seeded soils to adopt this new and easy method of restoring the land to its full crop-producing value.

In a paper read before the Physiological Society on March 21, Dr. A. D. Waller, F.R.S., demonstrated that the contractility of animal and vegetal nerves observed by Prof. Bose (see NATURE, March 5, supplement, p. iii) may be obtained on fiddle-strings, or any other kind of strings, and is due to heating of the structures by the "fairly strong tetanisation" currents used by Prof. Bose. Dr. Waller calculates that the heat developed by the currents used, in the absence of evaporation, is sufficient to raise the temperature of a nerve $1^{\circ}35$ per sec. Engelmann in 1895 showed that fiddle-strings in water contracted when heated. With weak tetanisation there is obtained elongation, with strong, shortening. The weight and the electrical conductivity of a fully contracted string are greatly diminished by loss of water.

ONE of the most important agricultural questions in Cape Colony, the deterioration of the veld, is discussed in the March number of the *Agricultural Journal of the Cape of Good Hope*. It seems to be established that the veld will no longer nourish cattle as well as formerly, and five causes are stated to have brought this about:—(1) overstocking and the kraaling of stock; (2) formation of sluits or dongas; (3) spread of noxious weeds; (4) burning of the veld; (5) destruction by drift sands. Overstocking, i.e. putting too many cattle on to a given area, is harmful, because the grasses or plants relished by the animals are so completely eaten off that they become exterminated, and their place is taken by plants which the animals have rejected, and which are, therefore, of no agricultural value. Some are positively noxious, e.g. the jointed cactus (*Opuntia pusilla*), which is likely to cause considerable trouble in future, the prickly pear, and the Mexican poppy. Kraaling, or herding the animals together at night to protect them from jackals, &c., has the effect of wearing down definite pathways, and thus starting the channels for the flow of water which finally develop into the sluits and dongas so characteristic of the veld. The burning of the veld is responsible for a good deal of damage, since the organic matter is largely destroyed, and there is considerable loss of nitrogen. Nevertheless, some means of removing old dead grass is necessary, for a good deal is apt to be left over from the previous season; sheep will not eat it, and it interferes with the new growth; there seems no option but to burn it. The whole problem is of vital importance, and can only be solved after careful scientific investigation.

THE American Government, in view of the rapid occupation of all the available land in the western States, has started a vast reclamation scheme. The most important is that for the irrigation of what are known as the Great Plains, the region extending from the Missouri River to the foot of the Rocky Mountains and from the Panhandle of Texas northward to the Canadian frontier. The projects now sanctioned in various parts of the country provide for the expenditure up to the year 1911 of about fourteen millions in the reclamation of some two millions of acres. The progress of this great experiment is described in the April number of the *National Geographical Magazine* by Mr. C. J. Blanchard, statistician to the U.S. Reclamation Service, under the title of "Homemaking by the Government." The illustrations of fruit and other products grown under irrigation present a vivid picture of the possibilities of this important enterprise. The most remarkable of these projects is the Salt River scheme in Arizona, which involved the construction of the "most wonderful highway ever built by man," that on Fish Creek Hill, where a road has been cut along the banks of a stupendous canyon through the living rock for a distance of forty miles.

THE chain has hitherto received scant attention from investigators in the field of elasticity and strength of materials, and a welcome addition to the two or three scattered memoirs on the theory of the stresses in chain-links is made by a memoir on the strength of chain-links by Prof. G. A. Goodenough and Prof. L. E. Moore, forming Bulletin No. 18 of the University of Illinois Engineering Experiment Station. The investigation described deals with the development of the theory of the stresses induced in chain-links with given conditions as regards loading, with experimental tests of the validity of the theory employed, and with the assumptions made as to the distribution of pressure between adjacent links, and the deduction from theoretical considerations alone of rational formulæ for the loading of chains. Experiments made on steel rings were found to confirm the theoretical analysis employed in the calculation of stresses. Experiments on various chain-links further confirm this analysis. The introduction of a stud in the link equalises the stresses throughout the link, reduces the maximum tensile stresses about 20 per cent., and reduces the excessive compressive stress at the end of the link about 50 per cent. The following formulæ are applicable to chains of the usual form:— $P=0.4 d^2S$ for open links, and $P=0.5 d^2S$ for stud links, where P denotes the safe load, d the diameter of the stock, and S the maximum permissible tensile stress.

THE report of the Meteorological Service of Canada for the year 1905 has recently come to hand; it consists of xix+418 quarto pages, nearly all of which are taken up with monthly and annual summaries, including hourly or bi-hourly observations of air-pressure and temperature at some of the first-order stations. The careful preparation of these voluminous tables is of itself a stupendous undertaking; among the extreme shade temperatures we note $104^{\circ}5$ at Spence's Bridge (British Columbia) in July, and $-53^{\circ}0$ at two stations in Alberta in February. The percentage of fulfilment of weather forecasts is very satisfactory, the average for all districts being 85.1; the greatest annual success is 86.9, in the Upper St. Lawrence district. In an interesting supplement Prof. W. J. Loudon discusses the effect of different winds on the "seiches" observed, and also gives the results of his researches in atmospheric electricity, at High Rock station, Georgian Bay.

IN the *Physikalische Zeitschrift* for May 1 Dr. L. Mandelstam considers the question whether the usual

method of representing dispersion on the electromagnetic theory, as due to the presence in the medium of electrical resonators, is capable also of explaining the gradual extinction found to take place as due to radiation from the resonators. He comes to the conclusion that it is not, and in this respect is in opposition to Prof. Planck, to whom the theory of dispersion owes so much.

THE concluding fascicule of the *Bulletin des Séances* of the Société française de Physique for the year 1907, which has just been issued, contains a valuable *résumé* of the communications made to the society during the past year. It occupies eighty pages, and is of the greatest service to those who have not the time to read the complete papers. A glance at the titles of the abstracts is sufficient to show that the Société française de Physique maintains its position as one of the most successful of the societies which receives and publishes original work done in the field of physics.

MANY geographical works, offered at greatly reduced prices, are included in a catalogue of publishers' remainders just issued by Mr. H. J. Glaisher, Wigmore Street, London, W.

AN admirable summary of the mineral resources of Western Australia is given by the Agent-General, the Hon. C. H. Rason, in the May number of the *Empire Review*. The twenty-three years' mining history of the colony proves it to be one of the richest mineral territories in the world.

AN illustrated itinerary of pleasure cruises to the Norwegian fiords by the yachting steamer *Midnight Sun* has been received from the Albion Steamship Co., Ltd., Newcastle-upon-Tyne. Each cruise extends over fourteen days, and the minimum fare is ten guineas. The sailings commence on June 6.

A USEFUL catalogue of electrical measuring instruments for technical and laboratory purposes has just been issued by Messrs. Isenthal and Co., Mortimer Street, London, W. Particulars and illustrations are given of electromagnetic, moving-coil, hot-wire, and switchboard instruments of special types, and also of aperiodic precision instruments on the dynamometer principle, and insulation testers. The catalogue makes the selection of a suitable instrument of any of these designs a simple matter.

MESSRS. MARION AND CO., LTD., of Soho Square, London, announce a prize competition in which money prizes are offered for photographic work done on their plates, films, and printing papers during the present season. Of the four classes into which the competition is divided, one is for photographs of scientific interest. Biological, geological, astronomical, and natural history photographs, spectroscopic work, and photomicrography serve to indicate the general character of this class, though other scientific subjects are eligible. The first, second, and third prizes in this class are, respectively, 10*l.*, 5*l.*, and 2*l.*, and Mr. Chapman Jones will be the judge.

THE recent removal of Swedenborg's body from London to Stockholm, after it had reposed in the Swedish Lutheran Church in London for one hundred and thirty-six years, is a part of a larger movement for the recognition of the genius of Swedenborg in the domain of science. The movement began outside Sweden. Dr. Max Neuberger, of Vienna, in 1901 delivered an address before the assembly of German Naturalists and Physicians entitled: "Swedenborg's References to the Physiology of the Brain." Following up this interest, Dr. Neuberger addressed a communication to the Academy of Sciences of Stockholm

in which he expressed his regret that Swedenborg's extensive manuscript on the brain, which is preserved in the library of the Academy of Sciences, had not yet been published. This led to the appointment of a committee to investigate the matter. Prof. Gustaf Retzius, the chairman of the committee and president of the academy, made a study of the subject of Swedenborg's physiological treatises. He became so impressed with the value of these works that he proposed to the academy to issue an edition of Swedenborg's scientific and philosophical works, and offered to bear the expense of the first three volumes himself. Several volumes of these and other of Swedenborg's works have already been published. The examination of Swedenborg's manuscripts is leading to the conclusion that theories and facts in many branches of science usually assigned to much later dates and to other men of science are becoming recognised as largely the work of Swedenborg.

OUR ASTRONOMICAL COLUMN.

A BRILLIANT METEOR.—A meteor of extraordinary brightness was seen by several observers at 9.45 on Sunday evening, May 17. Mr. T. F. Connolly, of the Solar Physics Observatory, observed the object from Wimbledon Common. It apparently commenced its flight about half a degree east of Polaris, and, travelling slowly to the east of north, passed about half-way between δ and γ Cassiopeiae. The brightness of the meteor exceeded that of Venus, which was above the horizon, and the head was pear-shaped. The duration of the flight was between three and four seconds; no trail was observed, and the meteor disappeared when at some twelve degrees above the horizon. This object was independently observed by Mr. H. E. Goodson, who states that it was one of the brightest he has ever seen. Mr. P. W. Copeland also writes to say that he observed the meteor at Belper, Derby, at the same time. He says:—"The meteor was of the slow-moving type, and I estimated its apparent diameter as from two to three times that of Venus at the present time. Just before the end of its path, a smaller portion, apparently at a lower temperature, separated and dropped in a more vertical direction. This observation has been confirmed by a friend who saw the meteor at Derby, eight miles from Belper."

CORRELATION OF STELLAR CHARACTERS.—A second paper by Miss Gibson and Prof. Karl Pearson on the correlation of stellar characters appears in the *Monthly Notices* (R.A.S.) for May (vol. lxxviii., No. 5, p. 415). The characters of which the correlations have been examined in this paper are magnitude, colour, spectral class, proper motion, parallax, and position, all of which are of fundamental importance in any study of cosmical structure. As might be expected, there is found to be a marked relationship between the colours and the spectral classes of the stars considered, whilst the relation between magnitude and spectral class is but about half so marked; the latter is sensibly increased if the temperature classification of Sir Norman Lockyer be taken as the index of spectral class. The type of spectrum is also shown to be definitely associated with proper motion and parallax. It follows that, judging from the Yale parallax stars considered, there is a sensible correlation between chemical constitution and motion in space. Among the numerous other results obtained by Prof. Pearson we may mention that he confirms Prof. Newcomb's deduction that the mean parallax of an array of stars of given proper motion is one-fifteenth of that proper motion.

VARIABLE STAR WORK AT THE LAWS OBSERVATORY, MISSOURI.—Bulletin No. 13 of the Laws Observatory, University of Missouri, contains brief descriptions of the Zöllner-Müller photometer and the Gans-Crawford telescope recently acquired by the observatory for use in the series of photometric observations being carried out there. The results of numerous observations and revised elements and light-curves are also published for the variable stars X and V Lacertæ. Bulletin No. 14, from the same source,